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Margret Buchmann and
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Abstract

When working against fragmentation in education, coherence must not be confused with consistency. While consistency implies logical relations and the absence of contradictions, coherence allows for many kinds of connectedness, including associations of ideas and feelings, intimations of resemblance, conflicts and tensions, and imaginative leaps. Coherence--but not consistency--is hospitable to change and imagination, while true to the many sides of concepts and experiences. Educational coherence is found where students and teachers can discover and establish relations among various areas of sensibility, knowledge, and skill, yet where loose ends remain, inviting a reweaving of beliefs and ties to the unknown.

COHERENCE, THE REBEL ANGEL[1]

Margret Buchmann and Robert E. Floden[2]

In calling for coherence in U.S. teacher education, people express abiding concerns about the effects of education. Scholars maintain that teachers go through their preparation relatively untouched, relying instead on common sense and their experience of schooling (Buchmann, 1987; Lortie, 1975). Pitted against these prior learnings, a fragmented curriculum is likely to have little or no effect (Barnes, 1987). Seeking to strengthen teacher education by making its elements more consistent, reformers often cite "increasing program coherence" as a central principle and even as the primary indicator of curricular worth (see, e.g., Howey & Zimpher, 1989). The highly publicized Holmes Group Report implicitly supports these views: "Basically a 'nonprogram' at present, professional studies are rarely interrelated or coherent. . . . Students . . . wander about rather than progressing systematically . . . through their programs" (Sedlak, 1987, p. 321).

People thus turn to a family of concepts that seem guardian angels of reform: program, system, direction, coherence, and consistency. Our argument is that--within this company--coherence is a rebel angel, advancing human learning but escaping control. We contrast coherence with consistency, two concepts with several resemblances: First, both satisfy the sensible criterion of nonfragmentation in the curriculum or the requirement that it should not be a collection of small bits and pieces. Denoting connectedness,

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[1]This paper will be a chapter in the forthcoming book, Detachment and Concern: Topics in the Philosophy of Teaching and Teacher Education, edited by Margret Buchmann and Robert E. Floden (New York: Teachers College Press).

[2]Margret Buchmann, professor of teacher education at Michigan State University, is coordinator of the Conceptual Analysis of Teaching Project. Robert E. Floden, professor of teacher education and educational psychology at MSU, was a senior researcher with the project.

coherence and consistency share, second, a status of relative terms, for understanding each depends on some clarity about what is supposed to "hang together" with what else, how, in what aspects, and to what ends. Connoting order, unity, and intelligibility, the concepts of coherence and consistency carry, finally, similar positive implications of value. Despite their resemblances, however, these two concepts are not interchangeable. Thus, while consistency implies logical relations and the absence of contradictions, coherence allows for many kinds of connectedness, encompassing logic but also including associations of ideas and feelings, intimations of resemblance, conflicts and tensions, previsagements and imaginative leaps.

Plain thinking, theories of choice, philosophy, the arts, and literature can alert one to the differences between coherence and consistency as forms of connectedness. Yet when educators invoke coherence--especially "program coherence"--they veer toward consistency as a proxy of worth and effectiveness. An incident at a meeting about research on teacher education highlights some of the meanings and values associated with coherence and related concepts. Speaking as if he expected immediate understanding and agreement, a well-known scholar recommended that the assembled investigators abandon their studies of teacher education, "because you already know that there aren't any programs." The blithe recommendation was rooted in assimilating the idea of a tightly structured curriculum to the concept of program, perhaps even of education. The denial of apparent facts (i.e., researchers thought they had already spent hundreds of hours studying a set of programs) provoked puzzlement and counterdenial.

Start Making Sense!

Let us build on this incident by imagining that a member of the audience jumped up--quite irate--to attack the notion that only tightly structured programs are good for teachers. "What's all this talk about programs got to do with education?" our voluble critic begins.

> Of course we want coherence in education and professional preparation, if you mean eschewing meaningless babble. People have to be able to make sense, in some fashion, of what they hear, read, and do. But implicit adherence to consistency brings in a lot more regimentation than we need to rise above randomness. A program that is too consistent fits students with blinders, deceives them, and encourages complacency. Remember that being focused is good only if people are heading in a good direction and are not blind as bats.
>
> I fear that the call for program coherence comes out of the same longing for certainty, order, and control that lies behind movements for all sorts of social engineering. It may be appealing to think one could design programs to turn out model teachers or learners, with the same reliability and precision that we can fabricate cars or refrigerators, being able to calculate the percentage of "lemons" with some accuracy. But teaching people to depend on others in making sense is not serving them well in the long run. Processing people through "prefab" experiences can't guarantee worthwhile learning.
>
> I am also bothered by hints that everything people are learning should be repeatedly reinforced. We know that significant change often comes through adventure--through running up against the unexpected, chancing upon things that are sharply contrasting or that are memorable but mysterious--too beautiful or disturbing to be understood, then and there. I don't think learners are well served by having all paths laid down for them. That might be all right for some technical training, but if people are to engage with the everyday problems of teaching and learning, they need practice in figuring out how different elements--even those that seem incongruous--can be connected and made to work together in acting and thinking.
>
> In teacher preparation and elsewhere, I'm not arguing for a shopping-mall education, but for an approach to curriculum and learning that fosters the weaving and reweaving of beliefs. That approach depends on patterns, loose ends, and animating ideas. There are connections, but there are also fuzzy bits and new threads of experience and meaning, with outworn or odd patches being worked over, stashed away for future use, or discarded. If the phrase "lifelong learning" means anything at all, this is it! Contrary to my emphasis on ruminative, productive thinking, I fear that people who trust in program coherence come to treat learners, inadvertently, as objects that will gradually be shaped to one

mold. To produce their outputs, programs relentlessly chip away at students, just as Tyler (1949) likened education to drops of water slowly eroding a stone.

Please pause to think about the assumptions underlying this unbearable image: assumptions about learners and the rightful use of power in unilateral human change. Can we tolerate the mechanistic views that surround complacent, hazy talk about "cumulative learning experiences" and "maximizing educational impact" on ethical and epistemological grounds--I mean, as appropriate for our moral relations with students and appropriate considering the limited depth and certitude of our knowledge about people, the world, education, or teacher learning? And even if we were "right" (which is not very likely, because most of our theories are murky if not false), wouldn't it be better to be open-minded than to take things for granted? We need to sort out what we have in mind when we talk about program coherence.

Overlapping Voices of Dissent

Let us get even more fanciful and imagine a symposium at which Israel Scheffler, Charles Lindblom, Leszek Kolakowski, Northrop Frye, Richard Wollheim, Richard Rodriguez, Stuart Hampshire, Elias Canetti, and George Lakoff and Mark Johnson speak to issues of consistency and coherence, from contexts including philosophy, political science, literature and the arts, educational autobiography, and personal diaries. Clarifying some of the critic's assumptions, these overlapping voices stress people's construction of coherence, rather than presuming that the world could or should be portrayed as neatly consistent. Moreover, if learners are repeatedly presented with objects of thought that others have trimmed to fit consistent patterns, they lack opportunities for responsibly making sense. Less agitated than the critic, the different speakers mark off consistency from coherence, seeing the latter form of connectedness as more hospitable to change and imagination, while true to the many sides of concepts and experiences.

The Benefits of Disintegration

Itself of different kinds, experience is open to legitimately different perspectives and interpretations. Ordered by their orientations to their

subjects, the disciplines of knowledge reflect, elaborate, and codify these variations and disagreements, thus making them available to study and discussion. Because of its adequacy to knowing and learning, Israel Scheffler (1973) stresses, "disintegration" actually has educational benefits:

> It is a fact of life that the modes of experience are various and that they generate differing perspectives, norms, and sensibilities. It is, it seems to me, an educational experience of the highest value to be confronted with these differences at an appropriate age, and to learn at first hand the disjointednesses and incongruities which no administrative integration can forever hide. . . . It is highly desirable, I think, for the student to learn that the opinions and approaches of experts differ violently, that the community of truth-seekers is not just one happy family. . . . A student who gets all his education screened through some neat integrative framework imposed in advance by others, without being forced to make his own sense of the discordances and discrepancies patent in experience, has been effectively protected from thinking altogether. (p. 106)

While learning should not be made unnecessarily difficult, educational experiences must not sell students short. The differences and <u>incongruities</u> that characterize the disciplines also characterize life and action; they challenge students' capacity to form intentions and make connections whose reach, complexity, and flexibility indicate their learning's worth. If learning depends, in great part, on enticing uncertainties, eye-opening experiences, and honest difficulties, denying or controlling discrepancies within and among the disciplines is foolish.

Scheffler sees, however, that helping students orient themselves in a world of multiplying ideas and experiences is a serious problem for educators. He finds no solution in increasing consistency by imposing "an overarching framework or shell to contain or encase variation within fixed limits" (p. 107). Yet mere faculty intuition or inertia is no answer either. Scheffler puts forward the idea "of unity through internal structure, a unity that would not set fixed limits to variation but would infuse it as it varied" (p. 107).

Inconsistency and Unifying Intentions

Calls for systematic progress in teacher learning, however, lean towards the notion that teaching knowledge can be presented as a neat system, displaying relations among ideas, facts, and principles--all joined without contradiction in theory and practice. A similar faith in consistency and conflict elimination has undergirded models of choice based on goal hierarchies. Echoing Scheffler, Charles Lindblom reflects that life is not so simple. People may wish to order the multiplicity of human goods by finding principles of super- and subordination that eliminate doubts and bring an end to searching. Yet their open-ended tasks of thinking and willing are at once more demanding and more meaningful. As Lindblom (1990) explains, the difference between discovering value hierarchies and creating networks of volition implicates a distinction between consistency and coherence:

> One examines many interrelationships among volitions in all directions and achieves at best a greatly flawed consistency that might be called coherence. . . . Coherence is admittedly a loose concept, but its obvious alternative, "consistency," is too rigid. . . . What ordinary people do to achieve coherence does not greatly differ in main outline from what scientists do in their scientific work. . . . The structure of one's volitions, then, takes the form of a web rather than a hierarchy, a web "stretched across the ground of experience, serving as one of the structures that unifies it.". . . For any one person, the search for coherence becomes an extension of the task not of finding but of forming, creating, or willing. (pp. 39-41)

Thus Lindblom views coherence in thought and action as an affirmation of people's capacity to weave structures responsive to the world as it is and could be. Fashioning relationships that stretch across the ground of experience in teaching will likewise result in a flawed consistency--temporarily redeemed by unifying intentions.

Teaching requires an inconsistency that is no mere inconsequence--want of logical sequence, connection, or relevance--but, instead, consequential

upon, and adequate to, its moral structure. Teachers must attend to many human goods whose diversity cannot be translated into set hierarchies without moral losses. It would, actually, be illogical to conclude that their conflicting nature alone disposes of the claims that values make upon us. Evoking previous voices of dissent, Leszek Kolakowski (1968) points out that people's inconsistency "is simply a secret awareness of the contradictions of this world" (p. 214).

Teachers and other people respond to moral dilemmas by temporarily suspending some goods without, however, denying or abandoning them. If this is inconsistency, Kolakowski concludes, then inconsistency is reasonableness and consistency an evasive ideological fiction which is, in effect, fanaticism. In stressing life's implacable contradictions, he runs through a list of compelling fidelities that also hold true for teaching:

> Our lives are bound up in conflicting loyalties that we must choose between in concrete situations. We must break one bond in favor of another, while still not questioning the first. Loyalty to the individual, to one's own outlook on the world, to human communities in which we find ourselves either accidentally or of free choice, loyalty to nations, parties, government, friends, to ourselves and those close to us, to our own nature and our convictions, to the present and the future, to concrete things and universalities. (pp. 218-219)

Reasonable inconsistency fosters modesty and grounded tolerance. If one admits that goods and loyalties that bear on one's decisions always exceed present capacities for attention, one concedes not only perennial imperfections but possibilities for error. Perhaps one's antagonist <u>is</u> right, and one's choice not only flawed but wrong.

<u>Coherent Narratives Without Linear Logic</u>

Like the disciplines of knowledge, literature can be seen in Lindblom's terms: as a web, indeed manifold webs, engaging with experience in a

responsive impulse of creation. For fiction, Northrop Frye (1976) argues that two types of narrative differ fundamentally in their principles of connection. The "hence" narrative makes events seem to grow naturally, almost inevitably, out of preceding events and character traits. The "and then" narrative contains incidents which happen to protagonists, but these events bear no necessary relations to one another. While testifying to their spellbinding nature, the recollection of such stories allows people to continue making connections that deepen and spread. Their pattern and logical gaps draw readers in, impelling them to form ideas and perspectives.

Differences in authorial roles, perhaps intentions, are associated with these types of narrative connection. If the nameless fascination of "what happened then . . . and then . . . and then" keeps people bound up in the story while calling on their imaginative resources, the "hence" narrative compels readers to "follow the leader" who, in claiming to display causal chains, does not seem to lead--choosing, directing, persuading--but to obey, instead, necessity itself.

Although it is not clear to what extent "hence" narratives do capture real logic or causality, their pretense of mirroring the given in its inevitable movement ironically converts art and authorship into authority. Insofar as "freedom in perception and understanding . . . is one of the recognized values art possesses," Richard Wollheim (1968, p. 155) adds, overly determinate narratives thus dispossess their readers: a point of educational, indeed, social significance beyond the arts. Comparing (prestigious) literary "realism" with romantic traditions, Frye (1976) further clarifies distinct forms and processes of narrative connection by juxtaposing images of movement in space that imply contrasting reader roles and outcomes in reading: "The

realist, with his sense of logical and horizontal continuity, leads us to the end of his story; the romancer, scrambling over a series of disconnected episodes, seems to be trying to get us to the top of it" (p. 50).

John Keats contends: "We hate poetry that has a palpable design upon us--and if we do not agree, seems to put its hand in its breeches pocket" (Forman, 1952, p. 95). Artists are characteristically many-minded and their intentions need not be homogeneous; neither a work nor an interpretation can therefore be correlated, unambiguously, with a "meaning" or "message." (See Wollheim, 1968, pp. 154-156.) While coherence is valued in art, its case for coherence is not one of overdetermination. Yet art's indeterminacy is not vagueness either: Competing interpretations are constrained by demands that art and literature make of people and that art itself makes of its practitioners. Wollheim therefore sees coherence as a construction midway between artist and audience, both of whom must create unity--in composing and interpreting; creating and re-creating--but neither of whom should impose a unifying structure upon the other. The dangers of overly determinate constructions apply regardless of who frames them: authors, curriculum designers, or learners themselves.

Missing the Point of Education

A curriculum needs a logically consistent message no more than a work of literature needs a story line in which each event has a linear causal connection to the one before it. Education can be coherent without being consistent; and coherence is not just a feature of design--curriculum structure--or unifying intentions, but a characteristic of learners' formative responses. Imposition must likewise be avoided: Neither side must take liberties with the other. Students can draw on a variety of understandings in

reading narratives that can be interpreted at many levels (e.g., as descriptions, archetypes, or metaphors). Some educational practices, however, reduce the essence of literature to a list or set of main points and themes, encapsulated in textbooks and study guides. Held by many "successful" students, related views ignore education's main value and misrepresent its contents and processes.

In an educational autobiography, Hunger of Memory, Richard Rodriguez (1982) makes sense of his school experiences. As a Mexican-American, he benefitted from learning English and being in public school. Still Rodriguez judges that he never recognized what there was to be learned:

> In the sixth grade I simply concluded that what gave a book its value was some major idea or theme it contained. If that core essence could be mined and memorized, I would become learned like my teachers. . . . After reading Robinson Crusoe, I wrote that its theme was "the value of learning to live by oneself." (p. 62)

Rodriguez distinguishes learning that yields perspectives from his own bookishness, associated with piecemeal accumulation and a bucket theory of learning. "Merely bookish, I lacked a point of view when I read. . . . I vacuumed books for epigrams, scraps of information, ideas, themes--anything to fill the hollow within me and make me feel educated" (p. 64).

What helped him understand his experiences was Hoggart's (1957) analysis of the "scholarship boy," a composite picture of the British working-class student who likewise succeeds at schooling without learning. Rodriguez devotes an entire chapter in Hunger of Memory to looking back at himself as a "scholarship boy," who, in Hoggart's words,

> tends to overstress . . . the piling-up of knowledge and of received opinions. He discovers a technique of apparent learning, of the acquiring of facts rather than of the handling and use of facts. . . . He rarely feels the reality of knowledge, of other men's thoughts and imaginings, on his own pulses. . . . He has

> something of the blinkered pony about him. (Quoted in Rodriguez, p. 67)

Even higher education left Rodriguez initially dispossessed. His balanced analysis fits with Dewey's (1916/1944) general conclusion that "because of our education we use words, thinking they are ideas, to dispose of questions, the disposal being in reality simply such an obscuring of perception as prevents us from seeing any longer the difficulty" (p. 144). Accumulating them as external givens, a learner does not feel, as Hoggart put it, "other men's thoughts and imaginings on his own pulses". This leaves him at the mercy of seeming facts, equipped with techniques for illusory learning. For all its appearance of upward mobility, success in moving through a formal curriculum may be meaningless, even disabling. Rodriguez, again, might turn to Dewey (1916/1944), concurring with the latter's assessment that--where education is taken as ready-made studies set from above--their stratification over experience is oppressive:

> Ordinary experience is not even left as it was, narrow but vital. Rather, it loses something of its mobility. . . . It is weighed down and pushed into a corner by a load of unassimilated information. It parts with its flexible responsiveness and alert eagerness for additional meaning. (p. 209)

Learning From the Disparate and Unexpected--in Time

Elias Canetti (1973/1978) wrote in his diaries: "Learning has to be an adventure, otherwise it's stillborn" (p. 75). Most people remember an experience with sudden, but lasting effects: an image, chance encounter, phrase or conversation that makes one see things "in a different light" (see also Bandura, 1982). Because such experiences are personal and may have few qualities that presage their power, they cannot be purposely built into a program--except indirectly, that is, by including content and activities that reward recollection and are open to manifold responsive engagements. To take

advantage of such potentials, education must deliberately leave room for the unexpected while preparing students to make the most of opportunities for adventures. Because chance and unpredictability--the unplanned and the unexplained--play such key roles in human learning, the arts, and sciences, Stuart Hampshire (1989) emphasizes that careful deliberation must figure in the unexpected. Hence, an acting, thinking person ought always

> to be open to surprises, discoveries, and uncertainties. Through an accident of experience he may discover in himself a disposition that he had never believed that he could have, or he may find a deep significance, and a source of enlightenment, in an activity which he had thought was trivial and worthless. We cannot know a priori what is superficial and what is profound from the standpoint of the developed and free imagination. (p. 133)

Learning often unfolds in slow motion, relieved by visitations of the past and leaps of the imagination. This is another argument against educators working too hard at connecting things for learners in one programmatic whole and systematic progression. Elias Canetti's (1973/1978) reflections on his urgent, monumental, self-imposed task of pulling together everything that might conceivably clarify phenomena of "crowds and power" illuminates the complex relations of unification, time, and earnest efforts in learning:

> Perhaps it was lucky for me that I never let myself be overwhelmed by my material in earlier years, that I always kept it detached from me. Thus every single part had its own, lasting effect. I could think about things which would otherwise have suffocated one another. Many things had time to meet and link up in memory, whereas otherwise they would have had a short and turbulent existence on the surface. Thus I can understand why the enormous material I have looked at during the past few months has not inspired any truly new ideas in me--it has only confirmed older ideas and given me new--I would say--scientific courage. (p. 136)

In the end, Canetti worked for 30 years on Crowds and Power (1960/1962).

It strengthens our argument that his reflections leave doubts and difficulties. Note that, in the attempt to make Canetti's (1973/1978) thoughts fit our section, we might have been tempted to stop the quotation

above with "older ideas." Trying to be true to his thinking, one is left wondering what the author meant by "scientific" courage. Looking at science in terms of results--collective knowledge sedimented in methods, formulas, and propositions--it appears that science is one thing and courage another. But personal bravery--being steadfast and willing to take risks--enters into scientific work or into its processes. The concept of courage focuses one's attention, in detail, on the latter aspects, themselves part of the multidimensional structure of the concept of science.

Metaphorical Coherence

In asking what it may mean for multiple metaphors, each of which partially structures a concept, jointly to provide conceptual understanding, George Lakoff and Mark Johnson (1980) contrast coherence and consistency. When metaphors overlap--that is, describe some characteristics in similar terms--they are coherent. For example, since "journey" and "container" metaphors for argument both use increasing amounts to represent progress, people can readily mix them: "We got a long way toward the conclusion by filling logical gaps." No single image fits the two metaphors (journey, container); hence, they are not consistent. Yet we need both (and more) to clarify features of "argument," as well as of education. For the journey, or process, metaphor includes the important aspect of direction (e.g., implying that one can go astray) absent from the container, or content, metaphor.

> The difference between coherence and consistency is crucial. Each metaphor focuses on one aspect of the concept ARGUMENT: in this, each serves a single purpose. Moreover, each metaphor allows us to understand one aspect of the concept in terms of a more clearly delineated concept. (Lakoff & Johnson, 1980, p. 94-95)

By extension, a larger set of metaphors is coherent when every metaphor has some overlap with some other members of the set. Thus, although

"journey," "growth," and "adventure" metaphors for education all connote change, journeys have destinations, growth indicates given potentials, and adventure--entailing chance and daring--adds a touch of the unknown. Still, people going on a journey also show initiative. And so on. Rather than advancing conceptual understanding, metaphorical consistency is a restriction that stands in its way.

Consider cutting diamonds or weaving cloth as further metaphors for education. Though not coincident, each suggests a structure for education and coherence that highlights different aspects of both concepts. Lustrous diamonds are cut skillfully, prefiguring a pattern and effects. Their cutting results, however, in many planes that are angled <u>against</u> each other; moreover, it brings out and enhances <u>inherent</u> powers to shine (i.e., refractive power). Lively sparks depend also on how one holds this durable jewel in life, reflection, and enjoyment. Does the owner let it get dulled with grime or leave it in its box, thus never allowing the diamond to emit bright, fitful flashes of light or glow with its steady fire?

Diamonds do not sparkle in the rough. What one can make of precious stones--in fashioning and responding to them--depends on knowledge, skills, and sensibilities. Still, boundary conditions are set by the inflexible object at hand: This is an important entailment of the diamond metaphor. Once cut, a stone can be recut, though its parts cannot be rejoined. As the irate critic argued, education can, on the other hand, be likened to an unfinished woven cloth: an artifact less given but more pliable, drawing on materials that can be found and that are made by people. While this metaphor encompasses the pleasures of touching and seeing, of making patterns and devising ornaments, it has aspects of everyday need, of wear and tear, that

are missing from the diamond metaphor. Yet the image of weaving and reweaving also gives more scope to action, spirited variation, and remediable errors.

Educational and Vocational Coherence

The voices heard at the fictive symposium overlap in encouraging educators to do what people already seem to be doing in choosing a place to live, composing a painting or poem, interpreting data or recalling fairy tales. Distinguishing coherence from consistency, the different speakers posit manifold webs of concepts, metaphors, and volitions that stretch across the ground of experience, occasionally getting on top of it. Making sense does not require either singleness of conception, equable harmony, or uniform progression. In brief, the advice to educators is, "Frame occasions for constructing coherence: Do not fabricate consistency!" Where the curriculum veers toward consistency, it verges toward narrowness, rigidity, and the dispossession of learners. What unites these dissenting voices is a quality of mature reflection that transcends schools of thought and disciplines in resonating to the possibilities and contradictions of the world.

Educational Coherence

The metaphor of an evolving web or woven fabric clarifies which points on the continuum of consistency and disjointedness are educative. Educational coherence depends on patterns and loose ends; on materials, ideas, and formative activities. Threads interlace, but there are fuzzy bits and dangling strands of experience and meaning, with outworn or thin patches being worked over or unravelled over time. Resulting from the way it is woven, texture may be strong and matted or filmy and insubstantial.

Briefly exposing students to numbers of disparate ideas and practices may hardly touch them; it may lead to a web with so few connections that

learners cannot orient themselves and that many parts of the web will escape their attention or recollection. A course of studies aiming to tie up all loose ends, in contrast, will be tightly structured; it may lead to a sturdy web that is densely entwined, yet with such a smooth boundary and filled-in texture that it admits few opportunities for making connections to new ideas or readily meeting the unexpected. Educational coherence is found where students can discover and establish relations among various areas of sensibility, knowledge, and skill, yet where loose ends remain, inviting a reweaving of beliefs and ties to the unknown.

In the university, faculty autonomy pulls the curriculum toward incongruities and fragmentation, as professors teach with regard to what they know best but with less regard to students' ease or difficulty in putting things together. But imposing consistency risks depriving students of specific and general educational benefits: being taught in areas of special faculty competence and being challenged to make sense of their disparate studies. Learners' chances for unifying their experiences with flexible responsiveness increase, furthermore, as teaching stays close to professors' live scholarship, the essence of which is creating coherence. In part, a move toward consistency may stem from the difficulty faculty have framing occasions for constructing coherence. It is easier to repair fragmentation by using simplified frameworks than by crafting educational experiences in which most students understand both grounded structures and legitimate discrepancies in, for example, mathematics or teacher education.

Program Coherence in Teacher Education

While a fragmented curriculum may hardly touch ideas derived from their own schooling, curricular consistency sells teachers short. Concepts central

to their education--such as teaching and learning--have multiple aspects no single perspective can contain. Attention to pupil learning, for instance, can encompass practicing a tennis serve, paying attention to the ideas of others, memorizing the spelling of "mosquito," and conceiving relations between algebra and geometry.

Though not coincident, different learning theories do have points of contact. In principle, all such theories must consider the roles of background knowledge, practice, and motivation, for instance. More specifically, a behaviorist theory of motor learning and an associationist theory of concept formation both feature repetition, albeit in different ways. (For an extension of this argument, see also Campbell's [1988, pp. 437-439] "fish-scale model of collective omniscience.") Even where faculty make no attempts to create overlaps, a curriculum including both theories could, in effect, be coherent--if teachers had developed the capacity and inclination to figure out how these two accounts of learning do or do not fit together in thought and in practice.

As Romano Guardini (1954) avers, university learning prepares students for their vocations. Because education must rest on a sense of intellectual responsibility and vigorous questioning, it cannot be ill defined or boundless. Form and flexibility are interdependent:

> There must be a whole: something that lends itself to a mental survey and in terms of which one can work practically. It must take a shape capable of incorporating new materials and problems without disintegrating: forever unfinished yet never unformed. And this whole takes its shape not only from subject matters, but from a form of prospective practice--embodying, accordingly, a living image of what it means to be a teacher, a man of law, or an engineer. (p. 8, author's translation)

Methods of inquiry and stirring ideas offer all students bridges to learning. Teachers and other professionals can also look to their future practice:

Images of teaching can serve as living links that offer connections forward and backward in time, as well as infusing understanding with personal meaning. Learning means hazarding structures and intentions amidst the variations of life.

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